REMARKS

Claims 1-38 are currently pending in the application. The Examiner rejected claims 1-38 under 35 U.S.C. 102(e) as being anticipated by Zhu (U.S. Patent No. 6,201,834). No amendments are currently being made.

The independent claims recite "annotating a bitstream header" or "annotating a video stream header" with network packet information specifying network packet boundaries. The bitstream header or video stream header is used to divide a modified bitstream into network packets for real-time streaming.

The Examiner argued that Zhu describes annotating a bitstream header with network packet information specifying network packet boundaries in column 4, lines 18-30. However, it is respectfully submitted that Zhu does not teach or suggest providing network packet information specifying network packet boundaries. The portion cited by the Examiner only describes a CompressedSize field of an information trailer "that can be used to locate the beginning of the bitstream information stream." "Access to the first structure for the first packet" is provided. However, Zhu does not teach or suggest providing network packet information specifying network packet boundaries. Zhu only provides a way to locate "the first structure for the first packet." However, no boundaries are provided.

According to various embodiments of the present invention, the bitstream header includes network packet byte indices to allow a segmenter to quickly divide a bitstream payload into packets without having to scan and copy the bitstream payload as was required in conventional implementations. For example, a segmenter can read a bitstream header and know the exact locations of each packet in the bitstream payload.

Zhu does not teach or suggest any mechanisms for performing this task. Zhu describes a system for recovering video bitstream packets lost during transmission. The video bitstream includes three parts. The first part is the standard compressed bitstream (column 3, lines 19-21), the second part is the bistream information stream, and the third part is the bitstream information trailer (column 3, lines 25-41).

The bitstream information stream includes a PACKET_LOST flag to indicate when a packet is lost (column 3, lines 26-28). The bitstream information stream also has data that identifies which of the video frame data are lost and indicate parameters for decompressing the compressed bitstream. (Abstract) Replacement compressed bitstream data is placed in the compressed bitstream in place of video frame data in the lost packet so that uncompressed video image data can be generated based on the data in the bitstream information stream. (Abstract)

The Examiner argued that Zhu discloses that the beginning of the bitstream information stream is associated with a double word boundary and that the first structure of the first packet is co-located at the beginning of the bitstream. However, having a first packet coincide with the beginning of the bitstream information stream is not "annotating a bitstream header to include network packet information specifying network packet boundaries." The Examiner further argues that once the beginning of the bitstream information stream is found, the bit offset field indicates the packet boundary. However, the bit offset field is contained in the bitstream information stream itself.

Zhu is believed to merely add error correction capabilities to a system that uses a conventional mechanism for splitting a bitstream. Zhu's conventional packet splitting mechanism does not "rapidly divide the bitstream into network packets for real-time streaming." The techniques of the present invention recognize the drawbacks of splitting a bitstream using a conventional mechanism. From the Background of the present application (page 4, line 19 – page 5, line 5), "there are several problems commonly encountered when repacketizing MPEG data into RTP packets. First, the server 103 must parse the entire MPEG bitstream, bit by bit, in order to determine how it will carve the MPEG system stream. More specifically, it must parse the entire MPEG bitstream to apply the protocol rules to locate appropriate start and end points for each RTP packet. In addition, the server must gather information to create the RTP packet headers. This parsing and information gathering imposes substantial processing load on the server CPU and may limit the ability of the server 103 to deliver real-time multimedia."

"The second problem arises because two copy operations are required to parse the bitstream. The first copy operation transfers the MPEG data from the file 102 into the buffer 108 where it is parsed. The second copy operation moves the data from the buffer 108 into the network packets. These two copy operations require significant CPU processing load, which

again may limit the ability of the server 103 to deliver real-time multimedia."

Consequently, the independent claims of the present application recite annotating a bitstream header with information specifying network packet boundaries allowing an apparatus to "rapidly divide the bitstream into network packets using the bitstream header for real-time streaming." In one example, the bitstream header includes a plurality of network packet indices. According to various embodiments, by providing network packet indices in a single location, a scan and copy of the bitstream payload as required by Zhu would not be needed.

In view of the foregoing, Applicants believe all independent and dependent claims now pending in this application are in condition for allowance. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (510) 843-6200.

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